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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/639,551	08/16/2000	Youhong Lu	00-335	3281

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EXAMINER	
PEZZLO, JOHN	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/639,551	LU, YOUHONG	
	Examiner	Art Unit	
	John Pezzlo	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948).
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

I. Claims 7-11 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Marash et al. (US 6,049,607) hereinafter Marash.

1. Regarding claims 7 and 13 – Marash discloses means for receiving a near end signal and a far end signal and the far end signal includes an echo of the near end signal, refer to Figures 1 and 5 and column 7 lines 30 to 67 and column 8 lines 1 to 20.

Marash discloses determination means coupled to the near and far end signals for determining characteristics of the signals such as SNR and beam angle, refer to Figures 1-5 and column 2 lines 3 to 46 and column 5 lines 62 to 67 and column 6 lines 1 to 7 and column 8 lines 1 to 42.

Marash discloses a filter coupled to the signals and using a predetermined algorithm to produce an estimate of an echo, refer to Figures 1 and 5 and column 2 lines 14 to 46 and column 7 lines 30 to 67 and column 8 lines 1 to 42.

Marash discloses a subtraction means for subtracting the out the estimate from the near end signal, refer to Figure 5 callout 508.

Marash discloses a control means coupled to the near and far end signals and determination means to adjust the operation of the filter based upon the characteristics of the signals, refer to Figures 1 and 5 and column 7 lines 30 to 67 and column 8 lines 1 to 41.

2. Regarding claim 8 – Marash discloses the control means determines the divergence of the adaptive filter, refer to Figures 1 and 5 and column 8 lines 1 to 20.

3. Regarding claims 9 and 15 – Marash discloses that the control means selectively deactivates the filter based on the characteristics of the near and far end signals such as the SNR and strong and weak signals, refer to the abstract and column 6 lines 7 to 23 and column 8 lines 1 to 42.

4. Regarding claims 10 and 14 – Marash discloses that the control means selectively freezes the filter based on the characteristics of the near and far end signals, refer to column 6 lines 7 to 23 and column 8 lines 1 to 19.

5. Regarding claim 11 – Marash discloses that the filter uses a LMS algorithm, refer to Figure 5 and column 2 lines 14 to 33.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

II. Claim12 is rejected under 35 U.S.C. 102(b) as being anticipated by Betts et al. (US 5,828,657) hereinafter Betts.

1. Regarding claim 12 – Betts discloses a first user device (DTE), refer to Figure 1 callouts 10 and 30.

Betts discloses a first communication link coupled to the DTE, refer to Figure 1 callouts 11 and 31.

Betts discloses a hybrid circuit coupled to a second communication link, refer to Figure 1, modem and PSTN modem, callouts 100 and 300.

Betts discloses that when the near end signal is transmitted and reaches the hybrid an echo is generated and combined with the far end signal and returned to the near end (the same scenario occurs for the far end signal being transmitted toward the near end), refer to Figures1 and 6 and column 5 lines 45 to 67 and column 6 lines 1 to 47.

Betts discloses the use of a training sequence which is a data signal not speech and the modem/hybrid circuits (callouts 100 and 300 in Figure 1) utilize the determination means and the

data sequence (not speech) to train the coefficients of the adaptive filter, refer to Figures 1-6 and column 3 lines 22 to 65.

Betts discloses an adaptive filter with a predetermined algorithm to produce an estimate of the echo, refer to Figure 6 and column 5 lines 45 to 67 and column 6 lines 1 to 47.

Betts discloses a subtraction means, refer to Figure 6 and column 5 lines 45 to 67 and column 6 lines 1 to 47.

Betts discloses a control means wherein the control means adjusts the operation of the filter based on the characteristics of the near and far end signals, refer to Figure 6 and column 5 lines 45 to 67 and column 6 lines 1 to 47.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

III. Claims 1-6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marash et al. (US 6,049,607) hereinafter Marash in view of Betts et al. (US 5,828,657).

1. Regarding claims 1 and 6 – Marash discloses a teleconferencing system which receives near end and far end signals and splits each near end and far end signal into 16 frequency bands

and provides a separate echo canceller for each frequency band, refer to Figures 1 and 5 and column 3 lines 55 to 60 and column 7 lines 30 to 67 and column 8 lines 1 to 20. Marash determines whether the adaptive filters of the echo cancellers will converge, refer to column 2 lines 14 to 61 and Figures 1 and 5 and column 8 lines 1 to 41.

Marash does not expressly disclose determining whether the far end and near end signals are representative of modulated signals.

Betts discloses modulated signals using QAM and performing echo cancellation using an adaptive filter, refer to Figure 6 and column 3 lines 1 to 21.

At the time of the invention, it would have been obvious to an ordinary person of skill in the art to combine Marash with Betts to determine whether the far end and near end signals are representative of modulated signals. The suggestion/motivation for doing so would have been that Marash discloses modulating the received near end and far end signals in the splitter, refer to Figure 4 and column 6 lines 63 to 67 and column 7 lines 1 to 13, therefore the echo canceller adaptive filter operates on modulated signals. The benefit being that the use of modulation is a standard signal processing technique for generating and transmitting electrical signals over a network.

2. Regarding claims 2 and 3 and 16 – Marash discloses 16 frequency bands which operate over the frequency spectrum of the near end and far end signals wherein each echo canceller operates over a different band, utilizing band pass filters, in order to allow the correct frequency band signal to be controlled, refer to Figures 1 and 5 and column 3 lines 55 to 60 and column 7 lines 30 to 67 and column 8 lines 1 to 20.

Marash does not expressly disclose a high pass filter.

Betts discloses the use of a notch filter (band pass filter) used to eliminate a tone signal, which is used to set the coefficients of the adaptive filter, refer to Figure 6 callout 615. A notch filter (band pass filter) is generated from a combination of a low pass and high pass filter.

At the time of the invention, it would have been obvious to combine Marash with Betts so that Marash could use the technique of generating a band pass filter utilizing a combination of a low pass and high pass filter in order to select each frequency band for one of the 16 echo cancellers. The suggestion/motivation for doing so would have been that Marash discloses the use of frequency bands and band pass filters (implemented using low pass and high pass filters) would be used to implement the filters. The benefit being that the band pass being easily implemented using low pass and high pass filters.

3. Regarding claim 4 – Marash discloses an adaptive filter echo canceller, which freezes the coefficients of the filter during certain operating conditions, refer to Figure 5 and column 8 lines 1 to 20.

4. Regarding claim 5 - Marash discloses an adaptive filter echo canceller, which deactivates under certain operating conditions, refer to Figure 5 and column 8 lines 1 to 20.

Response to Arguments

Applicant's arguments filed 16 March 2005 have been fully considered but they are not persuasive. Applicant argues on page 10 of the response that "neither Marash nor Betts teach or suggest determining whether a near-end or far-end signal is a modulated signal". The examiner respectfully disagrees. The examiner has stated that Betts discloses modulated signals using QAM and performing echo cancellation using an adaptive filter, refer to Figure 6 and column 3 lines 1 to 21. Marash also utilizes an adaptive filter technique, which is based on a matched filter using LMS algorithm which corrects for communication channel and matches the transmitted signal. Therefore, the LMS algorithm being a matched filter is optimized to detect the modulated QAM signal. Marash discloses modulating the received near end and far end signals in the splitter, refer to Figure 4 and column 6 line 63 to column 7 line 13.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (571) 272-3090. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C.

or faxed to:

(703) 872-9306

For informal or draft communications, please label ?PROPOSED≅ or ?DRAFT≅

Hand delivered responses should be brought to:

Jefferson Building

500 Dulany Street

Alexandria, VA.

John Pezzlo

4 May 2005

JOHN PEZZLO
PRIMARY EXAMINER